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Draft Environmental Impact Statement for the Proposed Relocation of Technical Area 18 Capabilities and Materials at the Los Alamos National Laboratory

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Chapters 1 through 11

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Title: Draft Environmental Impact Statement for the Proposed Relocation of Technical Area 18 Capabilities and Materials at the Los Alamos National Laboratory (TA-18 Relocation EIS)

Locations: New Mexico, Nevada, Idaho

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***Abstract*:** The National Nuclear Security Administration, a separately organized agency within DOE, is responsible for providing the Nation with nuclear weapons, ensuring the safety and reliability of those nuclear weapons, and supporting programs that reduce global nuclear proliferation. These missions are accomplished through the use of DOE's core team of highly trained nuclear experts. One of the major training facilities for DOE personnel is located at Technical Area 18 (TA-18), within the Los Alamos National Laboratory (LANL), Los Alamos, New Mexico. Principal TA-18 operational activities involve research in and the design, development, construction, and application of experiments on nuclear criticality.

Though TA-18 is judged to be secure by DOE's independent inspection office, its buildings and infrastructure are from 30 to more than 50 years old and are increasingly expensive to maintain and operate. Additionally, the TA-18 operations are located in a relatively isolated area, resulting in increasingly high costs to maintain a security Category I infrastructure. DOE wishes to maintain the important capabilities currently provided at TA-18 in a manner that reduces the long-term costs for safeguards and security. DOE proposes to accomplish this by relocating the TA-18 security Category I/II capabilities and materials to new locations.

The *TA-18 Relocation EIS* evaluates the potential direct, indirect, and cumulative environmental impacts associated with this proposed action at the following DOE sites: (1) a different site at LANL (the Preferred Alternative) at Los Alamos, New Mexico; (2) the Sandia National Laboratories/New Mexico at Albuquerque, New Mexico; (3) the Nevada Test Site near Las Vegas, Nevada; and (4) the Argonne National Laboratory-West near Idaho Falls, Idaho. The EIS also analyzes upgrading of the TA-18 facilities at LANL. As required by Council on Environmental Quality regulations, the *TA-18 Relocation EIS* also evaluates the No Action Alternative of maintaining the operations at the current TA-18 location.

Public Comments: In preparing this draft EIS, DOE considered comments received from the public during the scoping period (May 2, 2000, through June 15, 2000). Comments on this draft EIS may be submitted during the 45-day comment period. Public meetings on this EIS will be held during the comment period. The dates, times, and locations of these meetings will be published in the *Federal Register* notice announcing the availability of this draft EIS.

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Acronyms, Abbreviations, and Conversion Charts

ACRONYMS, ABBREVIATIONS, AND CONVERSION CHARTS

ANL-W	Argonne National Laboratory-West
BEIR	Biological Effects of Ionizing Radiation
CASA	Critical Assembly Storage Area
CAV	critical assembly vessel
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
DAF	Device Assembly Facility
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
EA	environmental analysis
EBR-II	Experimental Breeder Reactor-II
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FFTF	Fast Flux Test Facility
FMF	Fuel Manufacturing Facility
FR	*Federal Register*
FY	fiscal year
GPEB	general-purpose experimental building
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
KAFB	Kirtland Air Force Base
LACEF	Los Alamos Critical Experiments Facility
LANL	Los Alamos National Laboratory
MESA	Microsystems and Engineering Sciences Applications
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMAC	New Mexico Administrative Code
NMSF	Nuclear Material Storage Facility
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NTS	Nevada Test Site
OSHA	Occupational Safety and Health Administration
PEIS	programmatic environmental impact statement
PIDAS	Perimeter Intrusion Detection and Assessment System
PM_n	particulate matter less than or equal to *n* microns in aerodynamic diameter
RCRA	Resource Conservation and Recovery Act
SARP	Safety Analysis Report for Packaging
SEA	special environmental analysis
SHEBA	Solution High-Energy Burst Assembly
SNL/NM	Sandia National Laboratories/New Mexico
SNM	special nuclear material(s)
START	Strategic Arms Reduction Treaty

SWEIS	sitewide environmental impact statement
TA	technical area
TA-18	Technical Area 18
TREAT	Transient Reactor Test Facility
USFWS	United States Fish and Wildlife Service
U.S.C.	*United States Code*
ZPPR	Zero Power Physics Reactor

Metric Conversion Chart

To Convert Into Metric			*To Convert From Metric*		
If You Know	**Multiply By**	**To Get**	**If You Know**	**Multiply By**	**To Get**
Length					
inches	2.54	centimeters	centimeters	0.3937	inches
feet	30.48	centimeters	centimeters	0.0328	feet
feet	0.3048	meters	meters	3.281	feet
yards	0.9144	meters	meters	1.0936	yards
miles	1.60934	kilometers	kilometers	0.6214	miles
Area					
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092903	square meters	square meters	10.7639	square feet
square yards	0.8361	square meters	square meters	1.196	square yards
acres	0.40469	hectares	hectares	2.471	acres
square miles	2.58999	square kilometers	square kilometers	0.3861	square miles
Volume					
fluid ounces	29.574	milliliters	milliliters	0.0338	fluid ounces
gallons	3.7854	liters	liters	0.26417	gallons
cubic feet	0.028317	cubic meters	cubic meters	35.315	cubic feet
cubic yards	0.76455	cubic meters	cubic meters	1.308	cubic yards
Weight					
ounces	28.3495	grams	grams	0.03527	ounces
pounds	0.4536	kilograms	kilograms	2.2046	pounds
short tons	0.90718	metric tons	metric tons	1.1023	short tons
Temperature					
Fahrenheit	Subtract 32, then multiply by 0.55556	Celsius	Celsius	Multiply by 1.8, then add 32	Fahrenheit

Metric Prefixes

Prefix	*Symbol*	*Multiplication Factor*
exa-	E	1 000 000 000 000 000 000 = 10^{18}
peta-	P	1 000 000 000 000 000 = 10^{15}
tera-	T	1 000 000 000 000 = 10^{12}
giga-	G	1 000 000 000 = 10^{9}
mega-	M	1 000 000 = 10^{6}
kilo-	k	1 000 = 10^{3}
hecto-	h	100 = 10^{2}
deka-	da	10 = 10^{1}
deci-	d	0.1 = 10^{-1}
centi-	c	0.01 = 10^{-2}
milli-	m	0.001 = 10^{-3}
micro-	μ	0.000 001 = 10^{-6}
nano-	n	0.000 000 001 = 10^{-9}
pico-	p	0.000 000 000 001 = 10^{-12}
femto-	f	0.000 000 000 000 001 = 10^{-15}
atto-	a	0.000 000 000 000 000 001 = 10^{-18}

CHAPTER 1

Introduction

1. INTRODUCTION

Chapter 1 of this environmental impact statement (EIS) begins with an overview of the U.S. Department of Energy's Technical Area 18 (TA-18) Relocation proposal. Chapter 1 includes background information on the missions at TA-18, the scope of the *Draft Environmental Impact Statement for the Proposed Relocation of Technical Area 18 Capabilities and Materials at the Los Alamos National Laboratory* (*TA-18 Relocation EIS*), and the alternatives analyzed in the EIS. Chapter 1 also discusses other National Environmental Policy Act documents related to the TA-18 Relocation proposal, as well as the scoping process used to obtain public input on the issues addressed in this EIS. The chapter concludes with the organization of the document.

1.1 OVERVIEW

1.1.1 General

The National Nuclear Security Administration (NNSA), a separately organized agency within the U.S. Department of Energy (DOE), is responsible for providing the Nation with nuclear weapons, ensuring the safety and reliability of those nuclear weapons, and supporting programs that reduce global nuclear proliferation. These mission responsibilities are accomplished through the use of DOE's core team of highly trained nuclear experts. One of the major training facilities for DOE personnel is located at Technical Area 18 (TA-18) within Los Alamos National Laboratory (LANL), Los Alamos, New Mexico. The principal TA-18 operation is the research in and the design, development, construction, and application of experiments on nuclear criticality. The objective of nuclear criticality safety is to ensure that fissile material is handled so that it remains subcritical under both normal and credible abnormal conditions to protect workers, the public, and the environment.

TA-18 supports important defense, nuclear safety, and other national security mission responsibilities. The operations at TA-18 enable DOE personnel to gain knowledge and expertise in advanced nuclear technologies that support the following: (1) nuclear materials management and criticality safety; (2) emergency response in support of counterterrorism activities; (3) safeguards and arms control in support of domestic and international programs to control excess nuclear materials; and (4) criticality experiments in support of Stockpile Stewardship and other programs. (Section 3.1 of this environmental impact statement [EIS] provides a more detailed description of the specific TA-18 operations.) The TA-18 facilities are the Nation's only facilities capable of performing general-purpose nuclear materials handling for a variety of experiments, measurements (to determine the presence of nuclear materials), and training. TA-18 also houses the Western Hemisphere's largest collection of machines for conducting nuclear safety evaluations and establishing limits for operations.

The term "stockpile stewardship" describes how DOE meets its nuclear weapons responsibilities. Stockpile stewardship includes operations associated with manufacturing, maintaining, refurbishing, assessing, surveilling, and dismantling the nuclear weapons stockpile; the activities associated with the research, design, development, simulation, modeling, and nonnuclear testing of nuclear weapons; and the assessment of safety and reliability and certification of the stockpile.

The TA-18 buildings and infrastructure, some of which have been operational since 1946, range from 30 to more than 50 years of age and are increasingly expensive to maintain and operate. The Defense Nuclear Facilities Safety Board has recommended, in 1993 and 1997, that DOE continue to maintain the capability to support the only remaining criticality safety program in the Nation (DNFSB 1993, DNFSB 1997). Consistent with this, and to reduce the long-term costs for safeguards and security, on April 11, 2000, former Energy Secretary Bill Richardson announced the proposal to relocate the TA-18 operational capabilities and materials by the end of 2004 (DOE 2000d). Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 *et seq*.) and the DOE regulations implementing NEPA (10 CFR 1021), this *Draft Environmental Impact Statement for the Proposed Relocation of Technical Area 18 Capabilities and Materials at the Los Alamos National Laboratory* (*TA-18 Relocation EIS*) analyzes the potential consequences to the environment associated with relocating the TA-18 operations to a new location. In the Record of Decision for this EIS, DOE anticipates selecting the new location for the TA-18 operations and implementing that decision.

1.1.2 TA-18 Facilities and Operations

As shown in **Figure 1–1**, the TA-18 developed area consists of a main building, three outlying remote-controlled Critical Assembly Storage Areas (CASAs) (formerly known as "kivas"), several smaller laboratories, nuclear material storage vaults, and support buildings. The site is located on approximately 52.61 hectares (130 acres) along Pajarito Road. The Los Alamos Critical Experiments Facility and other experimental facilities are located at TA-18, which is situated in the base of a canyon whose walls rise approximately 61 meters (200 feet) on three sides. The three CASAs are hazard Category 2 nuclear facilities (i.e., hazard analysis shows the potential for significant onsite consequences) and are within fenced areas to keep personnel at a safe distance during criticality experiments. Additionally, the entire TA-18 site is bounded by a security fence to aid in physically safeguarding special nuclear materials (SNM), and the site is designated as a security Category I facility (Category I is the highest security classification employed by DOE and is used to protect SNM from theft and/or diversion). Site access is through a guarded portal.

Under the right conditions, fissile material is capable of maintaining a self-sustaining nuclear fission chain reaction. Nuclear fission is the process by which an atom absorbs a neutron, causing it to split into two smaller atoms while releasing energy and several neutrons. When a mass of atoms produces enough neutrons to cause additional fissions so that this reaction becomes self-sustaining, a fission chain reaction has been achieved. This condition of maintaining a chain reaction at the same fission rate is called criticality, and such a system is critical. If this fission rate decreases with time and eventually shuts down, the system is considered subcritical. Conversely, if this fission rate increases with time, the system is considered supercritical.

Nuclear Facilities Hazards Classification (DOE Order 5480.23)

Category 1 Hazard: *Hazard analysis shows the potential for significant offsite consequences.*

Category 2 Hazard: *Hazard analysis shows the potential for significant onsite consequences.*

Category 3 Hazard: *Hazard analysis shows the potential for only significant localized consequences.*

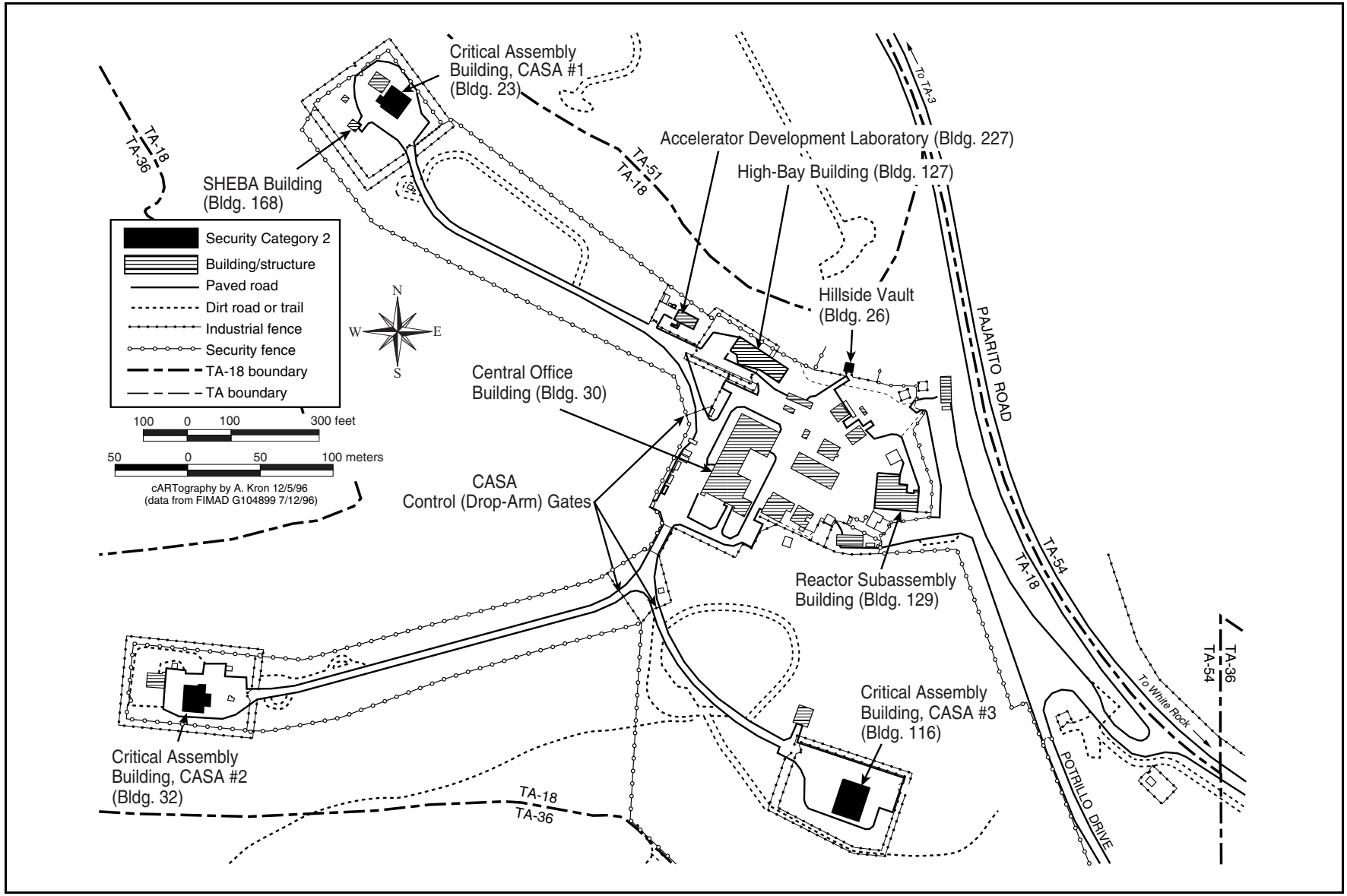


Figure 1–1 TA-18 Site

SPECIAL NUCLEAR MATERIALS SAFEGUARDS AND SECURITY (DOE Order 474.17-1A)

Special nuclear materials (SNM) are defined in the Atomic Energy Act of 1954 as (1) plutonium, uranium enriched in the isotope 233 or 235, or any other material designated as SNM; or (2) any material artificially enriched by any of the above.

DOE's policy is to protect national security and the health and safety of DOE and contractor employees, the public, and the environment by protecting and controlling SNM. This is done by designing specific safeguards and security strategies to prevent or minimize both unauthorized access to SNM and unauthorized disclosure, loss, destruction, modification, theft, compromise, or misuse of SNM as a result of terrorism, sabotage, or events such as disasters and civil disorders.

DOE uses a cost-effective, graded approach to providing SNM safeguards and security. Quantities of SNM stored at each DOE site are categorized into security Categories I, II, III, and IV, with the greatest quantities included under security Category I and lesser quantities included in descending order under security Categories II through IV. Types and compositions of SNM are further categorized by their "attractiveness," i.e., the relative ease of the processing and handling activities required to convert such materials into a nuclear explosive device. For example, assembled weapons and test devices fall under Attractiveness Level A. Pure products (i.e., metal items that can be used for weapons production in their existing form or after simple mechanical processing) are categorized under Attractiveness Level B. High-grade SNM (high-grade chemical compounds, mixtures, or metal alloys that require relatively little processing to convert them for weapons use) and low-grade SNM (bulk and low-purity materials that require extensive or complex processing efforts to convert them to metal or high-grade form) are categorized as Levels C and D, respectively. All other SNM (highly radioactive SNM not included under another attractiveness level, solutions containing very small amounts of SNM, uranium enriched to less than 20 percent uranium-235, etc.) fall under Level E. This alphanumeric system results in overall categories ranging from security Category IA (weapons and test devices in any quantities) to security Category I'VE (reportable quantities of SNM not included in other categories). Some of the terms used in this EIS to refer to SNM safeguards and security measures are defined below.

A Perimeter Intrusion Detection and Assessment System (PIDAS) is a mutually supportive combination of barriers, clear zones, lighting, electronic intrusion detection, assessment, and access control systems designed to detect, impede, control, or deny access to a Material Access Area, Protected Area, or Vital Area.

A **Material Access Area** is a security area authorized to contain a security Category I quantity of SNM. Material Access Areas have defined physical barriers, are located within a Protected Area, and are subject to specific access controls.

A **Protected Area** is a security area defined by physical barriers (walls or fences) to which access is controlled. Protected Areas are designed to protect security Category II SNM and classified material and/or to provide a security zone around a Material Access Area or Vital Area.

A **Vital Area** is a security area located within a Protected Area that has a separate perimeter and access controls, including intrusion detection, to provide layered protection of vital equipment.

An **SNM Vault** is a penetration-resistant, windowless enclosure equipped with an intrusion alarm system that is activated by opening the door. The walls, floor, and ceiling of an SNM Vault are constructed of materials that provide penetration resistance equivalent to a minimum of 8-inch-thick reinforced concrete. Further protection is provided by a built-in, combination-locked steel door that, in newer structures, meets the standards set forth in Federal Specification AA-D-6008 of the Federal Specifications and Standards (41 CFR 101).

A **Design-Basis Threat** is a potential threat that is assumed for the purpose of establishing requirements for safeguards and security programs and related systems, components, equipment, information, or material.

The primary operation at TA-18 is the performance of criticality experiments. Criticality experiments involve systems of fissile material(s), called critical assemblies, which are designed to reach a condition of nuclear criticality. The capability to conduct criticality experiments also includes development of nuclear instruments, measurement and evaluation of integral cross sections, accident simulation, dosimetry, and the detection and characterization of nuclear material. A critical assembly is a machine used to manipulate a mass of fissile material in a specific geometry and composition. The movement or addition of fissile material in the critical assembly can allow it to reach the condition of nuclear criticality and control the reactivity. A critical assembly is a small version (i.e., from several inches to several feet) of a nuclear power plant core. Fissile materials that can be used in a critical assembly typically consist of one of the following five main isotopes: uranium-233, uranium-235, neptunium-237, plutonium-239, or plutonium-241, in a specific composition and shape. A neutron source may be placed near the assembly to ensure the fission rate of the critical assembly can be readily observed as it approaches and reaches criticality. The quantity of fissile material capable of sustaining such a reaction is called the critical mass for that assembly. Critical mass is a function of many factors including the mass and enrichment of the fissile material; the geometry, or shape, of the assembly; and the presence of reflectors or neutron absorbers.

Since 1948, thousands of experiments with several fissile materials (uranium-235 and uranium-233, isotopes of plutonium, and neptunium-237) have been conducted at TA-18. These experiments have been performed with metal or compounds, both bare and reflected, as solid, liquid, and gas throughout the entire range of fast, intermediate, and thermal neutron spectra. Critical assemblies at TA-18 are designed to operate at low-to-average power and at temperatures well below the fissile material temperature operating limits (which sets them apart from normal reactors), with low fission-product production and minimal fission-product inventory. (See text box below for a discussion of a typical critical assembly.) SNM is stored in either CASAs or in the Hillside vault. The onsite TA-18 nuclear material inventory is relatively stable and consists primarily of isotopes of plutonium and uranium. The bulk of the plutonium is metal and is either clad or encapsulated. The use of toxic and hazardous materials is limited. (Section 3.1 of this EIS contains a more detailed description of the specific facilities and operations at TA-18.)

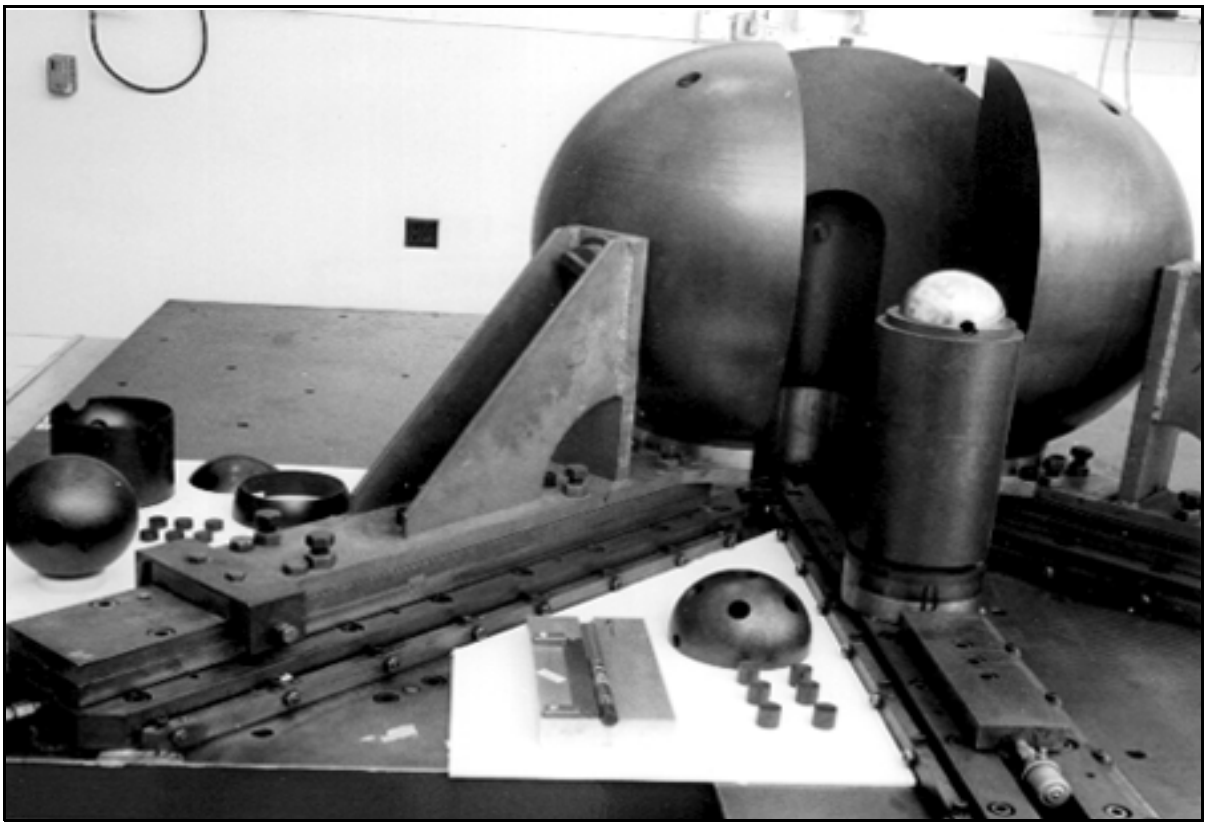
1.2 PROPOSED ACTION, EIS SCOPE, AND ALTERNATIVES

DOE proposes to relocate the TA-18 operational capabilities and materials to a new location and continue to perform those operations at the new location for the foreseeable future (for purposes of this EIS, the operations are assessed for a 25-year operating period). As described below, the EIS evaluates four alternative locations for the proposed action, as well as a TA-18 Upgrade Alternative and the No Action Alternative. The proposed action includes: transport of critical assembly machines and support equipment to a new location; modification of existing facilities to support the TA-18 operations; or construction and operation of "new" facilities for 25 years to support the TA-18 operations. Relocation of TA-18 operations would also include transport of up to approximately 2.4 metric tons (2.6 tons) of SNM associated with the TA-18 operations and a range of disposition options associated with the existing TA-18 facilities that would be vacated if the operations are relocated.

The *TA-18 Relocation EIS* evaluates the potential direct, indirect, and cumulative environmental impacts associated with the proposed action of relocating TA-18 capabilities and materials to a new location. Location alternatives include the following DOE sites: (1) a different site at LANL (the Preferred Alternative) at Los Alamos, New Mexico; (2) the Sandia National Laboratories/New Mexico (SNL/NM) at Albuquerque, New Mexico; (3) the Nevada Test Site (NTS) near Las Vegas, Nevada; and (4) the Argonne National Laboratory-West (ANL-W) near Idaho Falls, Idaho. These alternatives were developed by a DOE-wide Option Study Group (Group) chartered to develop reasonable alternatives for conducting TA-18 mission operations. The Group developed criteria that screened for sites with existing security Category I infrastructure; nuclear environmental, safety, and health infrastructure; and compatibility between the site

TYPICAL CRITICAL ASSEMBLY

Critical assembly designs at TA-18 use different methods to reach a critical condition. In some cases, additional fissile material is added in discrete quantities to an existing configuration. Other criticality assembly designs allow for a constant mass of fissile material, in two or more separate components, to be moved closer together in small increments. Some critical assembly systems incorporate movable neutron-absorbing components, which can be moved into and out of the fissile material mass to control the fission reaction. Critical assemblies can be composed of fissile materials in either solid or liquid form. For example, a critical assembly could range from a small 15-centimeter (6-inch) sphere of plutonium-239 metal with a mass of about 6 kilograms (13.2 pounds) to larger quantities of enriched uranium-235 in various shapes. An example of a critical assembly used in the TA-18 facility is the Flattop assembly, shown below. This assembly, including all of its structure, has a base of approximately 2.4 x 1.8 meters (8 x 6 feet) and a height of 1.5 meters (5 feet). The fissile material is a 15-centimeter (6-inch) sphere of enriched uranium (93 percent uranium-235) metal or plutonium-239 metal, reflected by the natural uranium hemisphere blocks.



Flattop Critical Assembly

and TA-18 operational capabilities (Section 3.2.2 provides a more detailed description of the site selection process). This EIS also analyzes the upgrade of TA-18 facilities at LANL and the No Action Alternative. These alternatives are described briefly below and in greater detail in Section 3.3 of this EIS.

TA-18 Upgrade Alternative—This alternative would involve upgrading the buildings, infrastructure and security infrastructure of the existing TA-18 facilities to continue housing these TA-18 operations at their present location at LANL. Under this alternative, some construction activities would be necessary.

LANL New Facility Alternative—This alternative would involve housing the security Category I/II activities in a new building to be constructed near the Plutonium Facility 4 at TA-55. Under this

alternative, a portion of the security Category III/IV activities (the SHEBA activities) would either be relocated to a new structure at TA-39 or remain at TA-18; the rest of the security Category III/IV activities would either be relocated to a new structure at TA-55 or remain at TA-18.

SNL/NM Alternative—This alternative would involve the housing of the security Category I/II TA-18 operations within a new security Category I/II facility within TA-V[1] at SNL/NM. Currently, SNL/NM operates a variety of research-oriented nuclear facilities at TA-V. A new underground facility and modifications to existing buildings are proposed to accommodate the TA-18 operations. Under this alternative, a portion of the security Category III/IV activities (the SHEBA activities) would either be relocated to a new structure at LANL's TA-39 or remain at TA-18; the rest of the security Category III/IV activities would remain at TA-18.

NTS Alternative—This alternative would involve the housing of the security Category I/II TA-18 operations in and around the existing Device Assembly Facility (DAF). Currently, DAF is used for the assembly of subcritical assemblies, as well as other miscellaneous national security missions. Under this alternative, a portion of the security Category III/IV activities (the SHEBA activities) would either be relocated to a new structure at LANL's TA-39 or remain at TA-18; the rest of the security Category III/IV activities would remain at TA-18.

ANL-W Alternative—This alternative would involve the housing of the security Category I/II TA-18 operations in the existing Fuel Manufacturing Facility (FMF) and other existing buildings at ANL-W. New construction and expansion of the existing FMF are proposed to accommodate the TA-18 operations. Security upgrades would also be necessary. Under this alternative, a portion of the security Category III/IV activities (the SHEBA activities) would either be relocated to a new structure at LANL's TA-39 or remain at TA-18; the rest of the security Category III/IV activities would remain at TA-18.

No Action Alternative—As required by Council on Environmental Quality regulations, the *TA-18 Relocation EIS* also evaluates the No Action Alternative of maintaining the TA-18 operations at the current location. This alternative would maintain the current operations at TA-18 as described in the Expanded Operations Alternative of the *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory* (*LANL SWEIS*) (DOE 1999b) and the associated Record of Decision (64 FR 50797, September 20, 1999). No upgrades or alternatives of either building, infrastructure, or security infrastructure would occur.

1.3 DECISIONS TO BE MADE

Based on the analytical results of this EIS as well as cost, schedule, safeguards and security issues, and other programmatic considerations, which are not part of this EIS, DOE intends to make the following decisions concerning the security Category I/II, SHEBA, and other security Category III/IV activities currently being conducted at LANL's TA-18 facilities:

- Whether to relocate the security Category I/II activities from TA-18 to a new location or maintain these mission support operations at their current location with or without upgraded facilities. If a decision is made to relocate the security Category I/II mission activities, to select one of four proposed relocation sites (i.e., TA-55 at LANL, TA-V at SNL/NM, DAF at NTS, or ANL-W)

- Whether to relocate some or all security Category III/IV activities to new and/or other locations at LANL (SHEBA activities to TA-39; other security Category III/IV activities to TA-55), or maintain these operations at their current location with or without upgraded facilities

[1] *Technical areas at SNL/NM are designated using roman numerals rather than the arabic numerals used at LANL.*

The analysis in this EIS will support decision making related to eventual site-specific construction and operation activities for any alternative selected.

1.4 OTHER RELEVANT NEPA REVIEWS

This section explains the relationship between the *TA-18 Relocation EIS* and other relevant NEPA documents and DOE programs. Completed NEPA compliance actions are addressed in Section 1.4.1; ongoing actions are discussed in Section 1.4.2.

1.4.1 Completed NEPA Compliance Actions

1.4.1.1 Final Environmental Assessment for Device Assembly Facility Operations (DOE/EA-0971)

The *Final Environmental Assessment for Device Assembly Operations* (DOE 1995d) was issued in May 1995 and evaluates the proposed action to open and operate DAF at NTS. Since DAF had already been constructed, this environmental assessment (EA) focused on potential impacts resulting from operation of the facility. These operations generally include assembly, disassembly or modification, staging, transportation, testing, maintenance, repair, retrofit, and surveillance of nuclear explosives. Such operations have previously been conducted at NTS in older facilities located in Area 27. DAF also provides enhanced capabilities in a state-of-the-art facility for the safe, secure, and efficient handling of high explosives in combination with SNM (plutonium and highly enriched uranium). Based upon the information and the analyses presented in the EA, DOE determined that there would be no significant impacts associated with the proposed action. The Finding of No Significant Impact was signed on June 8, 1995. DAF is one of the facilities considered under the proposed action to receive relocated TA-18 activities.

1.4.1.2 Environmental Assessment for Consolidation of Certain Materials and Machines for Nuclear Criticality Experiments and Training – Los Alamos National Laboratory, Los Alamos, New Mexico (DOE/EA-1104)

In May 1996, DOE issued the EA and Finding of No Significant Impact for Consolidation of Certain Materials and Machines for Nuclear Criticality Experiments and Training – Los Alamos National Laboratory (DOE 1996c). This EA compared the effects of consolidating nuclear criticality experiments machines and materials at the Los Alamos Critical Experiments Facility (LACEF) at LANL's TA-18. Actions consolidated through this EA resulted in the program which exists today and form the basis for the No Action Alternative presented in the *TA-18 Relocation EIS*.

1.4.1.3 Disposition of Surplus Highly Enriched Uranium Final Environmental Impact Statement (DOE/EIS-0240)

In June 1996, DOE issued the *Disposition of Surplus Highly Enriched Uranium Final Environmental Impact Statement* (DOE 1996d). DOE prepared this EIS because of the need to move rapidly to neutralize the proliferation threat of surplus highly enriched uranium and to demonstrate the United States' commitment to nonproliferation. The *Highly Enriched Uranium EIS* evaluated management alternatives for materials used by TA-18 activities. Alternatives considered include several approaches to blending down the highly enriched material to make it non-weapons-usable and suitable for fabrication into fuel for commercial nuclear reactors. In the Record of Decision, published in the *Federal Register* on August 5, 1996 (61 FR 40619), DOE stated it would implement a program that would blend as much as 85 percent of the surplus highly enriched uranium to a uranium-235 enrichment level of approximately 4 percent for commercial use and blend the remaining surplus highly enriched uranium down to an enrichment level of about 0.9 percent for disposal as low-level radioactive waste. Highly enriched uranium used in support of TA-18 activities could

be dispositioned, when necessary, using material management methods described in the *Highly Enriched Uranium EIS*.

1.4.1.4 Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada (DOE/EIS-0243)

In August 1996, DOE issued the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DOE 1996e). This document analyzed four alternatives: (1) the No Action Alternative, (2) Discontinuation of Operations, (3) Expanded Use, and (4) Alternate Use of Withdrawn Lands. On December 13, 1996, DOE published the Record of Decision in the *Federal Register* (61 FR 65551), selecting a combination of Alternatives 1, 3, and 4, with most activities pursued at levels described in the Expanded Use Alternative. As described in the Record of Decision, defense program activities at NTS will emphasize stockpile stewardship experiments and operations to maintain confidence in the safety and reliability of the stockpile without underground nuclear testing. DOE plans to conduct a wide variety of experiments within the appropriately zoned areas of NTS. Existing facilities, including DAF and Area 27, will be used to prepare the explosives, SNM, and other material required for these experiments. The Record of Decision also identified that DOE will reserve land and infrastructure on NTS to support current test readiness and national security missions and to support future defense program activities. It further states that DOE will establish a Defense Industrial Zone around critical assembly areas. This zone is dedicated solely to defense-related activities and is an area in which various future stockpile stewardship and management facilities could be sited. The proposed action to relocate the TA-18 capabilities and materials is consistent with the decisions documented in the Record of Decision for this EIS.

1.4.1.5 Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management (DOE/EIS-0236)

In September 1996, DOE issued the *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* (DOE 1996f). This programmatic EIS evaluated the potential environmental impacts resulting from activities associated with nuclear weapons research, design, development, and testing, as well as the assessment and certification of the weapons' safety and reliability. The stewardship portion of the document analyzed the development of three new facilities to provide enhanced experimental capabilities. The Record of Decision was published in the *Federal Register* on December 26, 1996 (61 FR 68014). In the Record of Decision, DOE elected to downsize a number of weapons complex facilities, to build the National Ignition Facility at Lawrence Livermore National Laboratory, and to reestablish pit fabrication capability at LANL. A supplement analysis (DOE/EIS-0236-SA, September 1999) was prepared to examine the plausibility of a building-wide fire at LANL's plutonium facility and to examine new studies regarding seismic hazards at LANL. The supplement analysis concluded that there is no need to prepare a supplemental EIS. The impacts of this action have been included in the baseline assessment of each candidate site and, therefore, are included in the potential cumulative impacts resulting from the *TA-18 Relocation EIS* proposed action. In addition, as identified in the *TA-18 Relocation EIS* Notice of Intent (65 FR 25472), criticality experiments at TA-18 support the stockpile stewardship mission addressed in this programmatic EIS.

1.4.1.6 Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory (DOE/EIS-0238)

In January 1999, DOE issued the *LANL SWEIS* (DOE 1999b). This document assessed four alternatives for the operation of LANL: (1) No Action, (2) Expanded Operations, (3) Reduced Operations, and (4) Greener Alternative. The Record of Decision for the *LANL SWEIS* was published in the *Federal Register* on September 20, 1999 (64 FR 50797). In the Record of Decision, DOE selected the Expanded Operations

Alternative. This alternative includes the continuation of all activities presently undertaken at LANL, at the highest level of activity, and an increased pit production capability. Consistent with that Record of Decision, operations at TA-18 would continue, and activities would increase by approximately 25 percent over past No Action operational levels. During the time that the *LANL SWEIS* was in preparation, DOE did not envision the current proposal to relocate the TA-18 operations or upgrade the existing TA-18 facilities, and, thus, that proposal was not included in the *LANL SWEIS*. The No Action Alternative assessed in this *TA-18 Relocation EIS* is consistent with the Preferred Alternative chosen through the *LANL SWEIS* Record of Decision.

1.4.1.7 Idaho National Engineering and Environmental Laboratory Advanced Mixed Waste Treatment Project Final Environmental Impact Statement (DOE/EIS-0290)

The *Idaho National Engineering and Environmental Laboratory Advanced Mixed Waste Treatment Project Final Environmental Impact Statement* (DOE 1999a) was issued in March 1999 and assessed the potential environmental impacts associated with four alternatives related to the construction and operation of the Advanced Mixed Waste Treatment Facility at the Idaho National Engineering and Environmental Laboratory (INEEL). The alternatives analyzed were: (1) a No Action Alternative, under which existing waste management operations, facilities, and projects would continue; (2) the proposed action/Preferred Alternative, under which BNFL, Inc., would build and operate an advanced mixed waste treatment project facility using proposed thermal and nonthermal treatment technologies for certification and shipment to the Waste Isolation Pilot Plant or to another acceptable disposal facility; (3) a nonthermal treatment alternative, under which some treatment of transuranic, alpha, and low-level mixed radioactive waste would occur at an advanced mixed waste treatment project facility at the same location as the proposed action, and waste that requires thermal treatment would be repackaged for storage; and (4) a treatment and storage alternative that would include the same processes as the proposed action/Preferred Alternative, except the treated waste would be placed in Resource Conservation and Recovery Act–permitted storage units at the onsite Radioactive Waste Management Complex at INEEL for long-term storage. The Record of Decision was published in the *Federal Register* on April 7, 1999 (64 FR 16948). In the Record of Decision, DOE selected the Preferred Alternative, although construction of the thermal treatment component of this alternative has been deferred pending the recommendation of a blue-ribbon panel of experts assessing possible technology alternatives. The impacts of the action DOE decided to implement are factored into the assessment of potential cumulative impacts discussed in the *TA-18 Relocation EIS* proposed action.

1.4.1.8 Final Site-Wide Environmental Impact Statement for Sandia National Laboratories/New Mexico (DOE/EIS-0281)

In October 1999, DOE issued the *Final Site-Wide Environmental Impact Statement for Sandia National Laboratories/New Mexico* (*SNL/NM SWEIS*) (DOE 1999f). This document analyzed three broad alternative levels of operation at SNL/NM: (1) the No Action Alternative, (2) an Expanded Operations Alternative, and (3) a Reduced Operations Alternative. The Record of Decision for the *SNL/NM SWEIS* was published in the *Federal Register* on December 15, 1999 (64 FR 69996). In the Record of Decision, DOE selected the Expanded Operations Alternative, without the Microsystems and Engineering Sciences Applications (MESA) Complex. Under the Expanded Operations Alternative presented in the *SNL/NM SWEIS* (exclusive of the MESA Complex), activity at TA-V would result in the highest reasonably foreseeable activity levels that could be supported by current facilities and the potential expansion and construction of new facilities. The proposal to relocate TA-18 to TA-V was not envisioned at the time the *SNL/NM SWEIS* was in preparation. The proposed action to relocate the TA-18 capabilities and materials is consistent with the decisions documented in the *SNL/NM SWEIS* Record of Decision.

1.4.1.9 Surplus Plutonium Disposition Final Environmental Impact Statement (DOE/EIS-0283)

In November 1999, DOE issued the *Surplus Plutonium Disposition Final Environmental Impact Statement*, (DOE 1999i), an EIS that was tiered from the *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement* (DOE/EIS-0229). The Record of Decision for the programmatic EIS, published in the *Federal Register* on January 14, 1997 (62 FR 3014), outlined DOE's approach to plutonium disposition and established the groundwork for the *Surplus Plutonium Disposition EIS*. The fundamental purpose of the program is to ensure that plutonium produced for nuclear weapons and declared excess to national security needs (now and in the future) will never again be used for nuclear weapons.

The *Surplus Plutonium Disposition EIS* evaluated reasonable alternatives for the siting, construction, and operation of facilities required to implement DOE's disposition strategy for up to 50 metric tons of surplus plutonium. The disposition facilities analyzed in this EIS include pit disassembly and conversion, plutonium conversion and immobilization, and mixed oxide fuel fabrication. The *Surplus Plutonium Disposition EIS* also analyzed the potential impacts of fabricating a limited number of mixed oxide fuel assemblies for testing in a reactor.

In the Record of Decision, published in the *Federal Register* on January 11, 2000 (65 FR 1608), DOE decided to provide for the safe and secure disposition of up to 33 metric tons of surplus plutonium as mixed oxide fuel and up to 17 metric tons of surplus plutonium through immobilization. DOE also decided to construct and operate each of the three disposition facilities at the Savannah River Site, fabricate the lead assemblies at LANL, and conduct postirradiation examination of the lead assemblies at Oak Ridge National Laboratory. Plutonium used in support of TA-18 activities could be dispositioned, when necessary, using material management methods described in the *Surplus Plutonium Disposition EIS*.

1.4.1.10 Final Environmental Impact Statement for the Treatment and Management of Sodium-Bonded Spent Nuclear Fuel (DOE/EIS-0306)

In July 2000, DOE issued the *Final Environmental Impact Statement for the Treatment and Management of Sodium-Bonded Spent Nuclear Fuel* (DOE 2000e). This document evaluates strategies to remove or stabilize the reactive sodium contained in a portion of DOE's spent nuclear fuel inventory to prepare the spent nuclear fuel for disposal in a geologic repository. The EIS analyzes, under the proposed action, six alternatives that employ one or more of the following technology options at nuclear fuel management facilities at the Savannah River Site or INEEL: electrometallurgical treatment, the plutonium-uranium extraction process, packaging in high-integrity cans, and the melt and dilute treatment process. The Record of Decision was published in the *Federal Register* on September 19, 2000 (65 FR 56565). In the Record of Decision, DOE decided to implement the Preferred Alternative of electrometallurgically treating the Experimental Breeder-II spent nuclear fuel and miscellaneous small lots of sodium-bonded spent nuclear fuel at ANL-W at INEEL. Because of the different physical characteristics of the Fermi-1 sodium-bonded blanket spent nuclear fuel also analyzed in the EIS, DOE decided to continue to store this material while alternative treatments are evaluated. The proposed action under this EIS contributes to the cumulative impacts at the site discussed in the *TA-18 Relocation EIS*.

1.4.1.11 Special Environmental Analysis for the Department of Energy, National Nuclear Security Administration: Actions Taken in Response to the Cerro Grande Fire at Los Alamos National Laboratory, Los Alamos, New Mexico (DOE/SEA-03)

In September 2000, DOE and NNSA issued this special environmental analysis (SEA) to document their assessment of impacts associated with emergency activities conducted at LANL, Los Alamos County,

New Mexico, in response to the recent wildfire known as the Cerro Grande Fire (DOE 2000h). This wildfire burned about 3,061 hectares (7,650 acres) within the boundaries of LANL and about an additional 14,200 hectares (35,500 acres) in neighboring areas. As a result of this wildfire, DOE identified the need to take action on an emergency basis to protect human life, property, and the environment. DOE considered that its actions should not be protective of the lives of only its employees, contractors, and subcontractors, but also the lives of all people living and working in the LANL region. DOE also considered that its actions should not protect property belonging to only the U.S. Government, but also the properties of neighboring and downstream landowners and residents.

DOE would normally prepare an EA or EIS in compliance with NEPA, as amended, to analyze potentially significant beneficial or adverse impacts that could occur if a proposed action were implemented. However, because of the urgent nature of the actions required by DOE to address the effects of the Cerro Grande Fire as it burned over LANL and the need for immediate postfire recovery and protective actions, DOE had to act immediately. DOE was, therefore, unable to comply with NEPA in the usual manner. DOE thereby invoked the Council on Environmental Quality's emergency circumstances clause of its NEPA Implementing Regulations (40 CFR 1506.11) and the emergency circumstances clause of DOE's own NEPA implementing regulations (10 CFR 1021.343). This SEA provides the reader with an assessment of the impacts that have resulted because of actions undertaken by DOE (or undertaken on behalf of DOE by other parties at DOE's direction or with DOE funding) to address a major disaster emergency situation. The SEA includes descriptions of actions; resulting impacts from actions; mitigation measures taken for actions that render their impacts not significant or that lessen the adverse effects of the actions; and an analysis of cumulative impacts. Unlike an EA or EIS produced in the course of routine NEPA compliance, this SEA does not include an impact assessment of alternative actions that DOE could have taken to meet its purpose and need for action. Nor does it include an assessment of the No Action Alternative. Furthermore, DOE will not issue a formal Record of Decision based on this SEA. However, actions not included in this SEA will be the subject of other NEPA reviews and analyses. Actions taken in response to this SEA are included in the baseline conditions for the No Action Alternative in the *TA-18 Relocation EIS*.

1.4.1.12 Environmental Assessment for the Microsystems and Engineering Sciences Applications Complex (DOE/EA-1335)

The *Environmental Assessment for the Microsystems and Engineering Sciences Applications Complex* (DOE 2000g) was issued in September 2000 and analyzed the potential effects of constructing several new facilities and upgrading existing facilities for the purposes of consolidating operations currently conducted at several SNL/NM facilities and modernizing SNL/NM's capabilities in microsystems design and production. The proposed action involves renovation of and upgrades to the Microelectronics Development Laboratory; construction of three new facilities; relocation of the activities currently conducted at the Compound Semiconductor Research Laboratory and several other buildings to the new facilities; and demolition of the Compound Semiconductor Research Laboratory at SNL/NM. Collectively, the new facilities would be known as the MESA Complex. Based on the analysis presented in the EA and the concerns of interested stakeholders, DOE found that there would be no significant impacts associated with the proposed action. The Finding of No Significant Impact was signed on October 16, 2000. The impacts of this action are factored into the assessment of potential cumulative impacts at SNL/NM in the *TA-18 Relocation EIS*.

1.4.1.13 Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility (Nuclear Infrastructure Programmatic EIS) (DOE/EIS-0310)

This *Nuclear Infrastructure Programmatic EIS* (DOE 2000k) was issued in December 2000. Under the authority of the Atomic Energy Act of 1954, as amended, DOE is responsible for ensuring the availability of isotopes for medical, industrial, and research applications; meeting the nuclear material needs of other Federal agencies; and undertaking research and development activities related to development of nuclear power for civilian use. To meet these responsibilities, DOE maintains nuclear infrastructure capabilities that support various missions. Current estimates for the future needs of medical and industrial isotopes, plutonium-238, and research requirements indicate that the current infrastructure may soon be insufficient to meet the projected demands. In the *Nuclear Infrastructure Programmatic EIS*, DOE proposed to enhance these capabilities to provide for (1) production of isotopes for medical and industrial uses; (2) production of plutonium-238 for use in advanced radioisotope power systems for future National Aeronautics and Space Administration space exploration missions; and (3) the Nation's nuclear research and development needs for civilian application.

The *Nuclear Infrastructure Programmatic EIS* evaluated the environmental impacts of a No Action Alternative (maintaining status quo), four alternative strategies to accomplish this mission, and an alternative to permanently deactivate the Fast Flux Test Facility (FFTF), with no new missions. Alternatives 2, 3, and 4 also include permanent deactivation of FFTF. The alternatives considered were the No Action Alternative; (1) Restart FFTF at Hanford, Washington; (2) Use Only Existing Operational Facilities; (3) Construct One or Two New Accelerators; (4) Construct a New Research Reactor; and (5) Permanently Deactivate FFTF (with no new missions).

In the Record of Decision which was published in the *Federal Register* on January 26, 2001 (66 FR 7877), DOE selected the Preferred Alternative (Alternative 2, Option 7, Use Only Existing Operational Facilities). DOE will reestablish domestic production of plutonium-238, as needed, using the Advanced Test Reactor at INEEL in Idaho and the High Flux Isotope Reactor at the Oak Ridge National Laboratory in Tennessee and will process irradiated plutonium-238 targets at the Radiochemical Engineering Development Center in Tennessee. DOE will permanently deactivate FFTF. The impacts of this action are factored into the assessment of potential cumulative impacts at INEEL in the *TA-18 Relocation EIS*.

1.4.1.14 Final Environmental Assessment for Atlas Relocation and Operation at the Nevada Test Site (DOE/EA-1381)

In May 2001, DOE issued the *Final Environmental Assessment for Atlas Relocation and Operation at the Nevada Test Site* (DOE 2001c). This document assesses the environmental effects of DOE's proposed action to disassemble the Atlas pulsed-power machine at LANL and transport it to NTS, where it would be reassembled in a new building in Area 6 north of DAF. After reassembly, Atlas would be recommissioned to ensure proper operation and then used to conduct as many as 100 pulsed-power experiments per year, depending on Stockpile Stewardship Program requirements. The proposed action of moving the Atlas machine to NTS does not represent a major change in the Stockpile Stewardship Program, but rather a relocation of an asset within the DOE complex. The potential effects of this action are factored into the assessment of potential cumulative impacts resulting from the *TA-18 Relocation EIS* proposed action.

1.4.2 Ongoing NEPA Compliance Actions

1.4.2.1 Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement (DOE/EIS-0287)

The *Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement* (DOE 1999j) was issued in December 1999. It evaluates alternatives for managing the high-level radioactive waste and associated radioactive waste and facilities at INEEL. Under the terms of the 1995 Settlement Agreement and Consent Order with the State of Idaho, DOE agreed to treat high-level radioactive waste currently stored at INEEL and to prepare the waste in a form ready to be shipped out of the State of Idaho by 2035. The purpose of this EIS is to assist DOE in making decisions concerning the management of this radioactive waste to ensure compliance with applicable laws and regulations and to protect the environment and the health and safety of the workers and the public in a cost-effective manner.

In this EIS, DOE evaluates reasonable alternatives and options for the treatment of high-level radioactive waste, sodium-bearing waste, newly generated waste, and the disposition of facilities associated with high-level radioactive waste generation, treatment, and storage at INEEL. In addition, this EIS is integrated with the ongoing Comprehensive Environmental Response, Compensation, and Liability Act program at the Idaho Nuclear Technology and Engineering Center. The proposed action under this EIS contributes to the cumulative impacts at INEEL discussed in the *TA-18 Relocation EIS*.

1.4.2.2 Sandia Underground Reactor Facility Environmental Assessment

DOE is in the process of preparing an EA for construction and operation of the Sandia Underground Reactor Facility, an underground facility designed for housing the Sandia Pulsed Reactor and other possible missions at TA-V, should they be relocated within SNL/NM. This EA is expected to be completed in 2001. If implemented, the construction and operation of this facility would parallel the construction and operation of the facility proposed for the TA-18 operational capabilities and material storage at SNL/NM.

1.4.3 Relationships to Other LANL Projects

DOE routinely conducts planning activities at its sites to identify long-term strategies and options for maintaining infrastructure in support of various missions. As part of these efforts, potential projects or actions are identified as options for future consideration. Many of these projects never go beyond the initial planning phases due to various factors such as insufficient justification or inadequate funding.

DOE has initiated a planning effort that focuses on the long-term strategy for conducting security Category I nuclear operations at LANL. Security Category I nuclear operations at TA-18 are discussed in Section 1.1.2. While proposals regarding TA-18 activities may fall within the scope of this plan along with other activities such as analytical chemistry, security, and pit manufacturing, DOE has determined that the TA-18 relocation proposal must move forward independent of this broader planning effort to ensure continuous mission support. Many of the activities in this planning effort are in the preliminary phase of consideration and the effort is too speculative at the present time for NEPA analysis. To the extent sufficient information is available, this draft EIS discusses the potential cumulative impacts from other reasonably foreseeable activities at LANL.

1.5 SCOPING PROCESS

Scoping is a process in which the public and stakeholders provide comments directly to the Federal agency on the scope of the EIS. This process is initiated by the publication of the Notice of Intent in the *Federal Register*.

On May 2, 2000, NNSA published a Notice of Intent to prepare the *TA-18 Relocation EIS* (65 FR 25472). In this Notice of Intent, DOE invited public comment on the *TA-18 Relocation EIS* proposal. Subsequent to this notice, DOE held public scoping meetings in the vicinity of all sites that might be affected by the proposed action. Public scoping meetings were held as follows: (1) May 18–Albuquerque, New Mexico; (2) May 23–North Las Vegas, Nevada; (3) May 25–Idaho Falls, Idaho; and (4) May 30–Española, New Mexico (note: this public meeting was originally scheduled for May 17 at Los Alamos, New Mexico, but was rescheduled and relocated due to the Cerro Grande Fire).

All comments received, orally and in writing at these meetings, via mail, fax, the Internet, and the toll-free phone line, were reviewed for consideration by DOE in preparing this EIS. A listing of the comments received during the public scoping process, as well as DOE's consideration of these comments, is provided in Appendix I of this EIS.

Summary of Major Comments

Many of the verbal and written comments received during the public scoping period identified the need for DOE to describe in detail the existing TA-18 capabilities and processes, as well as the specific requirements associated with the alternatives for fulfilling DOE's mission support needs. In particular, comments addressed the suitability of other sites to perform these mission support needs, the design of any buildings to be constructed or modified, construction and operation timelines, and controls to limit releases to the environment.

A significant number of comments also expressed concern about the costs associated with operating TA-18 criticality experiments facilities or relocating these capabilities elsewhere. These comments suggested that detailed cost analyses be conducted to analyze the construction, operation, security, and transportation needs of the various alternatives.

Many comments also addressed both the SNM needed to support, and the waste streams resulting from, TA-18 operations. Commentors requested clarification about the amount of SNM that would be required under each alternative, the manner and routes of its transport, and the availability of suitable shipping containers. Waste management concerns expressed by commentors included the need to identify the types and volumes of waste generated by the proposed action; the facilities available at each site to treat, store, or dispose of the waste; transportation requirements; and compatibility of the proposed action with state and Federal regulations.

Several commentors expressed concern about environmental, health, and safety risks associated with TA-18 operations. DOE representatives were urged to thoroughly evaluate the potential consequences of the proposed action on local wildlife, water resources, and the health and safety of area residents, and to address the Cerro Grande Fire at LANL in this EIS. Comments also suggested that the EIS quantify all radionuclide and chemical emissions resulting from the proposed action. Concerns were raised about the safety and security of TA-18 facilities and how safety and security would be addressed at each of the proposed relocation sites. Commentors expressed favor or opposition for a particular relocation alternative, reasons for which included security, cost, and workforce advantages.

Major issues identified through both internal DOE and public scoping are addressed in this EIS by analyses in the following areas:

- Land resources, including land use and visual resources
- Site infrastructure
- Air quality and acoustics
- Water resources, including surface water and groundwater
- Geology and soils
- Biotic resources, including terrestrial resources, wetlands, aquatic resources, and threatened and endangered species
- Cultural and paleontological resources, including prehistoric resources, historic resources, and Native American resources
- Socioeconomics, including regional economic characteristics, demographic characteristics, housing and community services, and local transportation
- Radiological and hazardous chemical impacts during normal operations and accidents
- Waste management
- Transportation of nuclear materials

In addition to analyses in these areas, the EIS also addresses monitoring and mitigation, unavoidable impacts and irreversible and irretrievable commitment of resources, and impacts of long-term productivity.

1.6 ORGANIZATION OF THIS EIS

This EIS consists of two volumes. Volume I contains the main analyses, while Volume II contains technical appendices that support the analyses in Volume I, along with additional project information. An Executive Summary is available as a separate publication. Volume I contains 11 chapters. The 11 chapters include the following information:

Chapter 1 – Introduction

Background on the TA-18 Relocation Project, proposed action, EIS scope, and alternatives; the relationship of this EIS to other DOE NEPA actions and programs; and issues identified during the scoping period

Chapter 2 – Purpose and Need

Reasons for DOE action and the proposed objectives

Chapter 3 – Proposed Action and Alternatives

Description of the TA-18 ongoing missions and the project requirements to fulfill them; description of the alternatives; a summary comparison of the potential environmental impacts of the EIS alternatives; and the Preferred Alternative

Chapter 4 – Affected Environment

Aspects of the environment that could be affected by the EIS alternatives

Chapter 5 – Environmental Impacts

Analyses of the potential impacts of the EIS alternatives on the environment and a comparison to the projected environmental conditions that would be expected if no action were taken; includes a separate analysis of relocating the TA-18 security Category III/IV activities to alternative locations at LANL

Chapter 6 – Regulatory Requirements

Environmental, safety, and health regulations that would apply for this EIS's alternatives and the agencies consulted for their expertise

Chapters 7 – 11

A list of references; a glossary; an index; a list of preparers; and a list of agencies, organizations, and persons to whom copies of this EIS were sent

Volume II contains 10 appendices, 6 of which provide technical information in support of the environmental analyses presented in Volume I. The 10 appendices contain the following information: critical assembly descriptions; human health effects from normal operations; human health effects from facility accidents; human health effects from transportation; environmental justice; environmental impacts methodology; ecological resources; *Federal Register* notices; an overview of the public participation process; and the Contractor Disclosure Statement.